

Appendix B

Case and Severity Classifications:

- **National Public Health Surveillance System Relationship Classifications**
- **NIOSH Severity Classifications**

NATIONAL PUBLIC HEALTH SURVEILLANCE SYSTEM RELATIONSHIP CLASSIFICATIONS

DEFINITE CASE: 1. Laboratory clinical or environmental evidence corroborates exposure, 2. Two or more new post-exposure abnormal signs and/or test/laboratory findings are reported by a licensed health care provider, and 3. The finding documented under health effects are characteristic for the pesticide and the temporal relationship between the exposure and health effects is plausible and/or the findings are consistent with an exposure-health effect relationship based upon the known toxicology of the putative agent.

PROBABLE CASE: 1. Laboratory clinical or environmental evidence corroborates exposure, 2. Two or more post-exposure abnormal symptoms reported but do not meet the threshold of a definite, and 3. The finding documented under health effects are characteristic for the pesticide and the temporal relationship between the exposure and health effects is plausible and/or the findings are consistent with an exposure-health effect relationship based upon the known toxicology of the putative agent.

OR

1. Evidence of exposure based solely upon written or verbal report by case, witness, application, observation of residue and/or contamination by other than a trained profession or other evidence suggesting that an exposure occurred, 2. Two or more new post-exposure abnormal signs and/or test/laboratory findings are reported by a licensed health care provider, and 3. The finding documented under health effects are characteristic for the pesticide and the temporal relationship between the exposure and health effects is plausible and/or the findings are consistent with an exposure-health effect relationship based upon the known toxicology of the putative agent.

POSSIBLE CASE: 1. Evidence of exposure based solely upon written or verbal report by case, witness, application, observation of residue and/or contamination by other than a trained profession or other evidence suggesting that an exposure occurred, 2. Two or more post-exposure abnormal symptoms reported but do not meet the threshold of a definite, and 3. The finding documented under health effects are characteristic for the pesticide and the temporal relationship between the exposure and health effects is plausible and/or the findings are consistent with an exposure-health effect.

SUSPICIOUS CASE: 1. Laboratory clinical or environmental evidence corroborates exposure, or evidence of exposure based solely upon written or verbal report by case, witness, application, observation of residue and/or contamination by other than a trained profession or other evidence suggesting that an exposure occurred, 2. Two or more new post-exposure abnormal signs and/or test/laboratory findings are reported by a licensed health care provider or two or more post-exposure abnormal symptoms reported but do not meet the threshold of a DEFINITE, and 3. Insufficient toxicological information is available to determine causal the relationship between the exposure and health effects.

UNLIKELY CASE: 1. Laboratory clinical or environmental evidence corroborates exposure, or evidence of exposure based solely upon written or verbal report by case, witness, application, observation of residue and/or contamination by other than a trained profession or other evidence suggesting that an exposure occurred, 2. Two or more new post-exposure abnormal signs and/or test/laboratory findings are reported by a licensed health care provider or two or more post-exposure abnormal symptoms reported but do not meet the threshold of a DEFINITE, and 3. Evidence of exposure-health effect relationship is not present due to no observed health or effect, a temporal relationship does not exist, or the constellation of health effects are not consistent based upon the known toxicology of the putative agent.

INSUFFICIENT INFORMATION: Insufficient data in the documentation of the pesticide exposure or insufficient data in the documentation of adverse health effects.

NOT A CASE: Strong evidence that no pesticide exposure occurred or insufficient toxicological information is available to determine causal relationship between exposure and health effects.

**Severity Index for use in State-based Surveillance of
Acute Pesticide-related Illness and Injury -
Descriptions of Severity Categories**

- 04 Mild illness or injury:** Low severity. Often involves skin, eye or upper respiratory irritation. May also include fever, headache, fatigue or dizziness. Typically the illness or injury resolves without treatment. There is minimal lost time (less than 3 days) from work or normal activities.
- 03 Moderate illness or injury:** This category often involves systemic manifestations. Usually treatment is provided. The individual is able to return to normal functioning without any residual disability. Usually, less time is lost from work or normal activities (3-5 days) compared to those with severe illness or injury. No residual impairment is present although effects may be persistent.
- 02 Severe illness or injury:** Considered life threatening and typically requires treatment. Commonly involves hospitalization to prevent death. Signs and symptoms include, but are not limited to, coma, cardiac arrest, renal failure and/or respiratory depression. The individual sustains substantial loss of time (more than 5 days) from regular work. Can include assignment to limited or light work duties or normal activities if not employed. This level may include the need for continued health care after the exposure, prolonged time off of work, and limitations or modification of work or normal activities. The individual may sustain permanent functional impairment.
- 01 Death:** Includes a human fatality resulting from exposures to one or more pesticides.

TABLE: Signs and symptoms by severity category (*Modeled after Persson et. al.,1998 and includes SPIDER database elements*)

ORGAN SYSTEM	SEVERITY CATEGORY AND CODE			
	FATAL	HIGH	MODERATE	LOW
	1	2	3	4
	Death	Severe or Life-threatening Signs	Pronounced or Prolonged Signs or Symptoms	Mild, transient, and spontaneously resolving symptoms
Gastrointestinal System		<ul style="list-style-type: none"> Massive hemorrhage/perforation of gut 	<ul style="list-style-type: none"> Diarrhea (GI4, sign only) Melena (GI7) Vomiting (GI6, sign only) 	<ul style="list-style-type: none"> Abdominal pain, cramping (GI1) Anorexia (GI2) Constipation (GI3) Diarrhea (GI4, symptom) Nausea (GI5) Vomiting (GI6, symptom)
Respiratory System		<ul style="list-style-type: none"> Cyanosis (RESP 2) + Respiratory depression (RESP 7) Pulmonary edema (RESP6) Respiratory arrest 	<ul style="list-style-type: none"> Abnormal pulmonary x-ray Pleuritic chest pain/pain on deep breathing (RESP8) Respiratory depression (RESP7) Wheezing (RESP9) Dyspnea, shortness of breath (RESP4, sign only) 	<ul style="list-style-type: none"> Cough (RESP1) Upper respiratory pain, irritation (RESP3) Dyspnea, shortness of breath (RESP4, symptom)
Nervous System		<ul style="list-style-type: none"> Coma (NS3) Paralysis, generalized (NS10) Seizure (NS5, sign only) 	<ul style="list-style-type: none"> Confusion (NS4) Hallucinations (NS99 Other) Miosis with blurred vision (NS14) Seizure (NS5, symptom) Ataxia (NS1, sign only) Slurred speech (NS12) Syncope (fainting) (NS17) Peripheral neuropathy (NS11, sign only) 	<ul style="list-style-type: none"> Hyperactivity (NS2) Headache (NS7) Profuse sweating (NS13) Dizziness (NS15) Ataxia (NS1, symptom) Peripheral neuropathy (NS11, symptom)

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	1	2	3	4
	Death	Severe or Life-threatening Signs	Pronounced or Prolonged Signs or Symptoms	Mild, transient, and spontaneously resolving symptoms
Cardiovascular System		<ul style="list-style-type: none"> Bradycardia/ heart rate <40 for adults, < 60 infants and children, <80 neonates (CV1) Tachycardia/ heart rate>180 for adults, >190 infants/children, >200 in neonates (CV4) Cardiac arrest (CV2) 	<ul style="list-style-type: none"> Bradycardia / heart rate 40-50 in adults, 60-80 in infants/children, 80-90 in neonates (CV1) Tachycardia / heart rate=140-180 in adults, 160-190 infants/children, 160-200 in neonates (CV4) Chest Pain (CV7) + Hyperventilation, Tachypnea (RESP5) Conduction disturbance (CV3) Hypertension (CV6) Hypotension (CV5) 	
Metabolism		<ul style="list-style-type: none"> Acid Base disturbance (pH< 7.15 or >7.7) 	<ul style="list-style-type: none"> Acid Base disturbance (pH = 7.15-7.24 or 7.60-7.69) Elevated anion gap (MISC4) 	<ul style="list-style-type: none"> Fever (MISC1)
Renal System		<ul style="list-style-type: none"> Anuria (GU2) Renal failure 	<ul style="list-style-type: none"> Hematuria (GU3) Oliguria (GU2) Proteinuria (GU4) 	<ul style="list-style-type: none"> Polyuria (GU1)
Muscular system		<ul style="list-style-type: none"> Muscle rigidity (NS9) + elevated urinary myoglobin + elevated creatinine 	<ul style="list-style-type: none"> Fasciculations (NS6) Muscle rigidity (NS9) Muscle weakness (NS8, sign only) 	<ul style="list-style-type: none"> Muscle weakness (NS8, symptom) Muscle pain (NS16)
Local effects on skin		<ul style="list-style-type: none"> Burns, second degree (involving >50% of body surface area) Burns, third degree (involving >2% of body surface area) 	<ul style="list-style-type: none"> Bullae (DERM1) Burns, second degree (involving <50% of body surface area) Burns, third degree (involving <2% of body surface area) 	<ul style="list-style-type: none"> Skin Edema/Swelling, Erythema, Rash, Irritation/Pain, Pruritis (DERM3 - 7) Hives/Urticaria
Local effects on eye		<ul style="list-style-type: none"> Corneal ulcer/perforation 	<ul style="list-style-type: none"> Corneal abrasion (EYE3) Ocular burn (EYE2) 	<ul style="list-style-type: none"> Lacrimation (EYE4) Mydriasis (EYE6) Miosis (EYE1) Ocular pain/irritation/inflammation (diagnosis of conjunctivitis) (EYE5)
Other effects				<ul style="list-style-type: none"> Fatigue (MISC5) Malaise (MISC6)